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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte HUGH L. BRUNK,
BRETT ALAN BRADLEY, and
BRETT T. HANNIGAN

_____

Appeal 2008-2679
Application 10/045,654[1]
Technology Center 2400

_____

Decided:[2] April 15, 2009

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Before LEE E. BARRETT, HOWARD B. BLANKENSHIP, and
CAROLYN D. THOMAS, *Administrative Patent Judges.*

BARRETT, *Administrative Patent Judge.*

DECISION ON APPEAL

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[1] Filed October 26, 2001, titled "Including a Metric in a Digital
Watermark for Media Authentication."

[2] The two-month time period for filing an appeal or commencing a
civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided
date shown on this page of the decision. The time period does not run from
the Mail Date (paper delivery) or Notification Date (electronic delivery).

This is a decision on appeal under 35 U.S.C. § 134(a) from the final rejection of claims 15-19, 23 and 25-27. Claims 1-9 and 11-14 are allowed. Claims 10 and 24 are canceled. Claims 20-22 are objected to for their dependency on a rejected claim. We have jurisdiction pursuant to 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

The invention

The invention relates to methods of steganography and data hiding, which can be used to help authenticate media. In particular, the methods include a watermark having various properties, such as being designed to be lost or degrade upon signal processing, and having a metric used for media authentication.

The claims

Claim 25 is illustrative:

> 25. A digital watermarking method comprising:
>
> embedding a digital watermark in a media signal, the digital watermark being designed to be lost or to degrade upon at least one form of signal processing;
>
> determining a metric for the embedded digital watermark, the metric comprising a benchmark for the embedded digital watermark;
>
> embedding the metric in the media signal; and

embedding data in the media signal, the data indicating how the metric was determined.

The reference

Shur   US 6,330,672 B1   Dec. 11, 2001

The rejections

Claims 15-19, 23, and 25-27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Shur.[3]

DISCUSSION

Claims 25-27

Appellants present three reasons why the Examiner erred. We are persuaded by each of the reasons.

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[3] Although the statement of the rejection in the (Third) Examiner's Answer (3d Ans.) entered January 16, 2008, includes claim 22 in the anticipation rejection, and includes an obviousness rejection of claims 20 and 21 over Shur and Takaragi, it is elsewhere stated that "claims 20-22 are objected to for their dependency on a rejected base claim" (3d Ans. 8), which is consistent with the first and second Examiner's Answers. It appears that these rejections were erroneously included in response to a appeal return notice on January 2, 2008, and did not intend to reinstate the rejection. Thus, claims 20-22 are objected to.

1.

Issue

Does Shur teach "embedding a digital watermark in a media signal, the digital watermark being designed to be lost or to degrade upon at least one form of signal processing," as recited in independent claim 25?

Contentions

The Examiner finds that Shur teaches a "watermark having the capacity to degrade to prevent use of the digital data after a predetermined date or number of plays (column 10, lines 1-11)" (Final Rej. 8; 3d Ans. 6).

Appellants discuss that examples of watermarks designed to be lost or to degrade are a "semi-fragile" digital watermark which degrades in response to some types of degradation of the watermarked signals but not others, and a "fragile" digital watermark where the strength (or other signal characteristics) of the watermark signal in a copy of the watermarked object is less than the strength in the original object (Br. 9). It is argued that, in Shur, "[t]here is no discussion of how the permitted number of plays will be used to degrade *the* watermark or cause *the* watermark to become lost" (*id.* at 10).

The Examiner states that changing the permissible number of plays in the watermark "degrades" the watermark with each play (3d Ans. 8). It is stated that claim 25 does not recite the terms "fragile" or "semi-fragile" (*id.*).

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Facts

The portion of Shur cited by the Examiner describes that "parametric data may comprise . . . [a] number of permitted plays or other parameter relating to the expiration of any license or lease" (col. 10, ll. 1-9).

Analysis

We agree with Appellants that embedding a watermark containing data about a permitted number of plays describes nothing about the watermark being lost or degraded upon signal processing, as claimed. Even if the watermark is changed with each play to account for the number of plays, we disagree with the Examiner's interpretation that a change in the number of plays "degrades" the watermark. The watermark is not lost or degraded, the information in it is just changed to a different number. The watermark is what carries the information, not the information itself.

Conclusion

Shur does not teach "embedding a digital watermark in a media signal, the digital watermark being designed to be lost or to degrade upon at least one form of signal processing." For this reason, the anticipation rejection of independent claim 25 and dependent claims 26 and 27 is reversed.

2.

Issue

Does Shur teach "determining a metric for the embedded digital watermark, the metric comprising a benchmark for the embedded digital watermark," as recited in independent claim 25?

Contentions

The Examiner finds that Shur teaches "[g]enerating a metric based on the detected watermark (column 11, lines 12-24)" (Final Rej. 8; Ans. 6).

Appellants argue that the claim limitation is "determining a metric," not "generating a metric" as stated by the Examiner and, in any case, denying use of recorded data based on the watermark fails to teach determining a metric, the metric comprising a benchmark (Br. 10).

The Examiner states that the metric is the number of plays, which is determined from data within the watermark, and the benchmark is the number of permissible plays, in this case zero (3d Ans. 9).

Facts

The Specification describes that an authentication metric is used to help measure or gauge the degradation in the watermark (para. [0083]), such as watermark signal strength, a watermark correlation value, a ratio of values, etc. (para. [0084]).

The cited portion of Shur teaches extracting the watermark and denying use of the recorded data based on data in the watermark. Extracting the watermark would require access to a key, the random number sequence and the perceptual coding function used to encode the watermark.

Analysis

We do not agree with the Examiner's interpretation that a number of plays is a "metric for the embedded digital watermark" and the number of plays remaining being zero is a "benchmark for the embedded digital watermark." While the number of plays is a "metric" in the broadest sense of a "standard of measure" of something, the number of plays has nothing to do with measuring the watermark: it is not a metric "for" the watermark. The fact that the system will deny use of the recorded data when a particular datum in the watermark reaches the number zero again has nothing to do with the watermark itself: the datum is not a benchmark "for" the watermark.

Conclusion

Shur does not teach "determining a metric for the embedded digital watermark, the metric comprising a benchmark for the embedded digital watermark." For this second reason, the anticipation rejection of independent claim 25 and dependent claims 26 and 27 is reversed.

3.

Issue

Does Shur teach "embedding data in the media signal, the data indicating how the metric was determined," as recited in independent claim 25?

Contentions

The Examiner finds that Shur teaches "[e]mbedding said metric into [the] data stream as part of the digital watermark (column 10, lines 1-11 and column 8, line 56-column 9, line 4)" (Final Rej. 8; 3d Ans. 6).

Appellants argue that the rejection does not address the limitation in question (Br. 10-11).

The Examiner finds that Shur teaches "[e]mbedding of the digital watermark into the media stream includes indicia of the metrics that constitute the digital watermark (Shur, column 4, lines 13-34)" (3d Ans. 9) where "indicia refer to the type of transaction that is purchased by the user, namely a least of media stream, and the limitations of that transaction, the number of permitted plays" (*id.*).

Appellants respond that the Examiner maps the term "metric" to the number of permitted plays, but Shur does not indicate *how* the permitted number of plays was determined (Reply Br. 4). It is also argued that the information related to a lease and a permitted number of plays does not include data indicating how a metric is determined.

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Facts

The Specification describes embedding data indicating the method used to determine the metric, which is used to recover the metric: "a digital watermark includes a payload (or message) indicating how metric 20 was calculated. In this alternative, metric module 32 is versatile, comprising the ability to generate metric 34 according to the specified metric 20 generation criteria." Para. [0091].

Shur describes that the embedded watermark may contain "indicia of the form of the transaction" (col. 4, ll. 25-26), such as the expiration date of a lease or "data indicating the number of licensed plays" (col. 4, ll. 29-30).

Shur describes that embedded "watermark input parametric data may comprise . . . [a] number of permitted plays or other parameter relating to the expiration of any license or lease" (col. 10, ll. 1-9).

Analysis

"Indicia of the form of the transaction," of the types described in Shur, are not a "metric comprising a benchmark for the embedded digital watermark" because the indicia deals with information unrelated to the watermark. We also agree with Appellants that "indicia of the form of the transaction," assuming it is a "metric," says nothing about "how the metric was determined," as recited in claim 25. It is not sufficient that data is embedded in the media signal, the data must be a metric and must specify how it was determined.

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Conclusion

Shur does not teach "embedding data in the media signal, the data indicating how the metric was determined." For this third reason, the anticipation rejection of independent claim 25 and dependent claims 26 and 27 is reversed.

Claims 19 and 23

Appellants present two reasons why the Examiner erred.

1.

Issue

Does Shur teach "embedding second information in the media signal, the second information corresponding to a rendering channel through which the media signal will be rendered," as recited in independent claim 19?

Contentions

The Examiner finds that Shur describes "[e]mbedding the encoding algorithm for the digital data in the media stream (column 10, lines 1-11)" (Final Rej. 8; 3d Ans. 5).

Appellants argue that "while the cited encoding algorithm may relate generally to an act of embedding, it is not understood to teach or suggest a rendering channel, e.g., a printer, a streaming device or broadcast channel" (Br. 13).

The Examiner states that it is implicit "that the media stream is meant to be played (rendered) in some kind of signal reproduction device" (3d Ans. 10) and when the media is put in the device, the "device 'reads' the digital watermark and if the watermark is valid plays the media signal" (*id.*).

Facts

The Specification describes:

> Metric 20 is adjusted to accommodate the degradation prediction. Degradations may be a function of the media signal (12 or 16) or of an anticipated rendering process. For example, a prediction or estimate of how the watermark 10 degrades, e.g., as a function of media signal 12's local characteristics and/or using knowledge of the anticipated legitimate media rendering system (e.g., a printer, broadcaster, etc.) is included in metric 20.

Para. [0086].

The portion of Shur cited by the Examiner states that "watermark input parametric data may comprise . . . the encoding algorithm that was used to encode the signal via perceptual coder 110" (Shur, col. 10, ll. 1-10).

Analysis

We agree with Appellants that the encoding algorithm for encoding the signal has nothing to do with the rendering channel, i.e., with how the media will be reproduced or represented. The fact that media has to be rendered on some device as stated by the Examiner does not imply the

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existence of information corresponding to the rendering channel through
which the media signal will be rendered. For example, digital media on a
compact disc does not need to include information identify the rendering
channel because the user knows to put it in a CD player.

Conclusion

Shur does not teach "embedding second information in the media
signal, the second information corresponding to a rendering channel through
which the media signal will be rendered." For this reason, the anticipation
rejection of independent claim 19 and dependent claim 23 is reversed.

2.

Issue

Does Shur teach "analyzing the digital watermark embedded in the
media signal to determine a baseline state for the digital watermark," as
recited in independent claim 19?

Contentions

The Examiner finds that the "baseline state" corresponds to the
number of permitted plays (Final Rej. 7; 3d Ans. 5).

Appellants argue that "carrying this position forward, if a number of
permissible plays is determined from watermarked media . . . , information
corresponding to this number must then be embedded in the watermarked

media signal" (Br. 13), but there is no suggestion of providing this extracted number back to an embedder for re-embedding (*id.* at 14).

The Examiner refers to data that limits the permissible number of plays for the rendering channel. The Examiner responds that there is no limitation of re-embedding the extracted information. The data is checked to see if the digital watermark would result in a digital signals not protected by a watermark (3d Ans. 11).

Appellants argue that the Examiner's new position impermissibly relies on the number of permitted plays for both "the first information corresponding to the baseline state of the digital watermark" and "the second information corresponding to a rendering channel through which the media signal will be rendered" (Replay Br. 5-6).

Facts

We do not find the term "baseline" in the Specification. Appellants refer to paragraphs [0087] and [0088] and Figures 4a and 4b for this limitation (Br. 5). We interpret "analyzing the digital watermark embedded in the media signal to determine a baseline state for the digital watermark" to correspond to "a metric analysis of the unaltered watermarked media signal 22" (para. [0088]) where the "baseline state" is the "unaltered" signal.

Analysis

Under the Examiner's interpretation, the number of permitted plays is, perhaps, a "baseline" for the number of times a media can be played, but we do not see how it can be fairly described as a "baseline state for the digital watermark." Again, the information in the watermark is different than information about the watermark itself. Thus, the Examiner's interpretation is not persuasive.

Appellants' arguments about re-embedding are construed to mean that the watermark must somehow keep track of how many times the media has been played to determine whether the number of plays has exceeded the baseline. It is not clear how this argument relates to the claim limitation. However, Appellants' argument that the Examiner has shifted position to rely on the number of plays for both the "first information" and the "second information" is persuasive because the same data cannot satisfy both limitations. For this additional reason, the Examiner's reading of the claim onto Shur is not persuasive.

Conclusion

Shur does not teach "analyzing the digital watermark embedded in the media signal to determine a baseline state for the digital watermark." For this additional reason, the anticipation rejection of independent claim 19 and dependent claim 23 is reversed.

Claims 15-18

Appellants present two reasons why the Examiner erred.

1.

Issue

Does Shur teach "embedding a digital watermark in a media signal, the digital watermark being designed to be lost or to predictably degrade upon predetermined signal processing," as recited in independent claim 15?

Conclusion

We find that Shur does not teach this limitation for the reasons stated in the discussion of claim 25. For this reason, the anticipation rejection of independent claim 15 and dependent claims 16-18 is reversed.

2.

Issue

Does Shur teach "generating a metric based on the detected digital watermark," as recited in independent claim 15?

Contentions

The Examiner finds that Shur teaches "[g]enerating a metric based on the detected watermark (column 11, lines 12-24)" (Final Rej. 7; 3d Ans. 4).

The cited portion of Shur teaches extracting the watermark and denying use of the recorded data based on the watermark.

Appellants argue that they fail to see how this teaches generating a metric as recited in claim 15 (Br. 16).

The Examiner states that the metric is the permitted number of plays, which has to be generated to be understandable to the media reproduction device (3d Ans. 12).

Facts

The portion of Shur cited by the Examiner teaches extracting the watermark and denying use of the recorded data based data in the watermark, such as the number of plays.

Analysis

It appears that Shur merely reads the permitted number of plays from the watermark. It is not clear that the permitted number of plays is a "metric" within the ordinary meaning of a "standard of measure" because it is simply a number recorded in the watermark. Assuming the permitted number of plays is a "metric," it is not clear that it is "generated" in the ordinary meaning of "to bring into existence." *See In re Scroggie*, 170 Fed. Appx. 132, 135 (Fed. Cir. 2006) (nonprecedential) ("The term 'generating page data' means that the page data is 'generated,' not merely 'selected.'").

We do not agree with the Examiner's finding that reading a number embedded in the watermark is "generating a metric."

Conclusion

Shur does not teach "generating a metric based on the detected digital watermark." For this additional reason, the anticipation rejection of independent claim 15 and dependent claims 16-18 is reversed.

CONCLUSION

The rejection of claims 15-19, 23, and 25-27 is reversed.

REVERSED

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